1: Conzemius M-4, 5 (1921) 1932
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526 staff play. The object of the game is to see which can keep up longest the continual strain upon the muscles of the arm, and ultimately strike the staff from the hand of the other."

HYGIENE: DISEASES AND THEIR CURE

515 Most of the Indians keep themselves very clean and take a bath twice a day in the river adjoining their settlement. As they wear but little clothes this is a very simple operation with them; they keep their body cleaner than do the lower class of the Ladinos, or of the white race in Europe, where the clothes are frequently the main source of dirtiness.

514 When the Indian goes to stool he always takes to the water, drifting down the river until he comes to a secluded spot, where he can perform this operation in privacy. When finished he cleanses the body with water.

515 The presence of dogs and pigs in the huts is responsible for the great quantity of fleas to be found there. In spite of the great care devoted to the hair, the latter is frequently full of vermin, and it is not an uncommon occurrence to see at the villages rows of women picking off one another's lice and crushing the troublesome insects between the teeth—a most disgusting sight.

MALARIA.—A swelling of the spleen and anemia are common 164 enough and are undoubtedly the result of malaria (M.: *wrih*; T.: *wara*, *warai*; P., U.: *yuma*, *yumah*),[44] which is endemic in the lowlands, although rarely fatal. The transmitting agent of malaria is a mosquito of the genus *Anopheles*, which is very common.

● 751 For malarial fevers infusions from the bark of certain trees are administered, especially that of the copalchí (*Cinchona* sp.). Instead of sudorific bush medicine, quinine is also administered nowadays. The fever or lemon grass (*Andropogon nardus* L.) is also used for this purpose. The sudorific is followed by a steam bath. The stricken person is enveloped in tunu blankets, and water is thrown on some large heated stones placed at his feet; he then inhales the thick vapor or fumes produced thereby. This part of the treatment is excellent, for it induces perspiration; but as the patient is then taken to the riverside and forced to take a cold bath pneumonia is often the result.

Among the Sumu the patient is carried to one of the numerous hot springs (*dolo*) which abound in their territory, and immersed therein, or he is buried up to the armpit in the hot sand at the edge of the pool.

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[44] These names were formerly used by both Miskito and Sumu as a general term for most other maladies, but nowadays the Miskito have adopted the word *siknis* (Engl. "sickness") in the latter sense.

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will be known as *kyaki yumu-ka*. The Sumu have apparently taken this belief from the Miskito, and they have no distinctive name for the ill; the Rama of Nicaragua call it *yakubi*.

The sukya cures this illness after its source has been revealed to him in dreams, for the treatment differs slightly according to various animals which have caused it. But in all cases the belly of the patient is strongly massaged with animal grease (also vaseline, coconut oil), while the sukya keeps on continually a low whistle in order to induce the spirit to depart. Among the Christianized Miskito there are also some people who heal *yumu* by similar methods; they are known as *yumu yabaka upliku* "people curing yumu."[86]

Women *enciente* may occasionally suffer from *kwihra yumu-ka* "pregnancy yumu"; the child is supposed to die then invariably, unless the sukya applies a treatment.

OTHER INDIGENOUS DISEASES.—Dysentery (M.: *taldura;* S.: *ba-pau*) occasionally appears in the form of an epidemic; it is generally cured by the administration of an infusion from the bark of the nance tree (*Byrsonima crassifolia* H. B. K.).

To cure diarrhea (M.: *byara plapaya;* T., P.: *ba lanin;* U.: *bawas lanaka*), the favorite remedy is an infusion prepared by boiling the bark of the mountain guava tree or the seed of the zapote or monkey apple. The Sumu also boil the rootstock (M.: *labu;* S.: *sara*) of the black or Ulwa banana.

According to the investigations carried on by the Rockefeller Foundation, hookworm is found on about 75 per cent of the Indian population living around Matagalpa. There is no doubt that it is also common among the Indians of the Mosquito Coast. Hookworm is seldom fatal, but there is progressive anemia and frequently interference with mental and physical development, causing occasionally premature death.

Children especially seem to be infected with intestinal parasites, as may be seen from their color and their enormously swollen belly; this is largely due to their habit of eating earth, charcoal, and the like.

Rheumatism (M.: *kyaia lâlwaya, dusa lâlwaya;* S.: *wakal dalanin, wakal dalanaka*) is supposed to be caused by thorns or fishbones which have been introduced into the flesh by evil spirits. The sukya pinches and kneads the afflicted spot, then makes a small incision with a glass splinter and, applying his mouth to the wound, he sucks a little and finally produces a prickle or bone, which he had carefully hidden between his teeth.

[86] Zlock (162) gives *yumuk* as the Miskito name for a native doctor curing with medicines. In the Carib dialects of Surinam and adjacent regions *yumu* is the name for some sort of spirit.

[i.e. yumu, or stomachache, see cat. 116, PA 119-20 – Analyst]

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Wickham (b: 160–161; c: 205) states that the Ulwa used to cure pains in the limbs by flogging the aching part with a kind of nettle, until the skin became raised in bumps. 164 757

A disease of the eyes, perhaps trachoma, called *tikri bilikan* by the Miskito, is prevalent; it does not produce total blindness, but causes great pain. Foreigners appear to be immune to it. 164

Venereal diseases, as syphilis (M.: *mairmanka;* S.: *pildi*) and gonorrhea (M., S.: *iskadora*), are only met with in the larger villages at the coast. Anthropologists and the medical world seem, however, to agree now that syphilis is of American origin.

Yellow fever likewise is undoubtedly of New World origin, and was formerly endemic in certain parts of the Central American lowlands. In the sparsely populated country under consideration, however, no authentic case of yellow fever has been recorded. Perhaps the transmitting agent, a species of mosquito (*Stegomyia fasciata* syn. *Aëdes* sp.), is absent. Black water fever is also unknown. Leucorrhea is, however, very common. Indians suffer seldom from hemorrhoids (M.: *sisbila dilwaya;* S.: *sarani putulnia, saraka putulnaka*), which swelling is prevalent among whites residing in the country.

FOREIGN DISEASES.—Europeans have introduced among the Indians a number of distressing maladies formerly unknown to them, and against which they had not the slightest immunity. Although strong and robust, the Indians are especially subject to infections by the germs of diseases generated by large communities. 164 177

Epidemics of our common catarrh (M.: *syakka;* T., P.: *ohdana;* U.: *sastiak isasaka*) have occasionally caused great havoc among the Indians of the interior.

Whooping cough (M.: *ilya;* S.: *duk*) appears occasionally as an epidemic among children, whereby many of them die.

Influenza or grippe also occurs periodically as an epidemic. It seems to have been brought to the country for the first time in 1807–08 by some Miskito returning from the logwood and mahogany camps of British Honduras. Consumption is also found sometimes, especially among the Sumu.

Measles and smallpox were brought to the New World by the first conquistadores and facilitated the subjugation of the Indians. Epidemics of measles (known by the Spanish name "*sarampion*") are responsible for many deaths; this disease was already observed at Cabo Gracias a Dios among the Miskito during the latter half of the seventeenth century (Exquemelin, French ed.: II, 277). Smallpox has on different occasions decimated entire villages, but since the middle of the nineteenth century has not appeared on the Mosquito Coast. Wickham (b: 204–208) gives an account of the

last epidemic of Asiatic cholera which swept the country in 1867 and 1868.

3: Pijoan D-5 (ca. 1945) 1946
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164

Mixed Worm Infestation in 100 Children From Zapuca and Waspam (Coco Basin)
Nemathelminthes

Age of Child	*Number of Children Infected*			
	Ascaris Lumbricoides	*Enterobius Vermicularis*	*Trichuris Trichiura*	*Necator Americanus*
5—10	56	31	60	10
10—15	21	16	56	13

Trichuris trichiura infestation was common throughout the population. However, as the children become older, and among adults, there was a decreasing incidence of infestations, other than Trichuris, proportionate to the age of the individual. It is presumed that as age increases the subjects are more careful about their habits and the ordinary methods of re-infection are reduced.

757 164 In treating intestinal parasites, the Indians use numerous decoctions made from tree barks. As far as can be ascertained the brews act mainly as cathartics and are not, strictly speaking, vermicidal. The effect of violent catharsis is two-fold. First, there is the psychological effect of direct action of the therapeutic of reducing a swollen abdomen and the consequent relief from distension or constipation, and second, there is a diminution in the quantity of parasites, since many were removed by cathartic action. The Indians, however, prefer our methods for treating intestinal helminths and seek such treatment whenever available.

THE INFECTIOUS DISEASES OF THE COCO BASIN

Yellow Fever

164 Carter's investigations[71] have revealed that yellow fever was a disease brought to the New World from Africa. The first epidemic occurred in Yucatán in 1648. Since then numerous epidemics of yellow fever have been described; the distribution of the disease and dates of occurrence have been listed by Hirsch.[72]

As far as could be determined yellow fever has not been reported from the eastern coast and the interior of Nicaragua. Dr. Thaeler, at Bilwas Karma, has never seen a case in this area and other investigators have suspected it in this region but were unable to discover its presence.

[71] Carter, H. R. Yellow fever: an epidemiological and historical study of its place of origin. 1931. Baltimore.

[72] Hirsch, August. Handbook of geographical and historical pathology. 1883. Vols. I and II. New Sydenham Society, London.

3: Pijoan D-5 (ca. 1945) 1946
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[164] sease debilitates the population, reduces the activity and energy of the workers, depresses the intelligence of the children and diminishes fecundity. Since the Miskito coast abounds in mosquitoes especially those that carry the disease, it is only reasonable that malaria constitutes a major public health problem of the area.

In the Coco Basin, most of the inhabitants are either in the throes of malaria, in a period of remission or have had the disease: the exact status being difficult to differentiate. A swelling of the spleen, anemia, fever are most commonly attributed to malaria *(Wrih)*. For malarial [751] fevers the bark of certain trees are administered, particularly copalchi *(Cinchona sp.)* The stricken person is enveloped in *tunis* blankets with hot stones placed at his feet, forthwith he is often taken to the river and given a cold bath.

The high incidence of malaria is due to two reasons, the first being the large numbers of anopheline mosquitoes capable of transmitting the disease and secondly the numerous sources of host reservoirs for the parasite. Thus the infected and the infectors are numerous. The higher death rates (impression) occur among the very young and the aged. At San Carlos the death rate from malaria, between the ages of 2 to 10 years of age, is approximately 12 per cent. Most of the [166] aged, we were told, died of fever and the older people on occasion sing this chant:

[539] *"The fever returns and I shall die. I drink medicine put it on my body. The fever will kill me and I shall die. The medicine does not help me. I have been good to my family. I have had the fevers. This time it (the fever) will take me."*

[22] Our investigations were primarily directed to children because they, not being at work, were easier to secure and examine and it was easier to determine exactly the incidence of autochthonous malaria in each locality. Furthermore the children rarely leave the community and among them are fewer imported cases. However certain of the older people were examined and these are included in this report.

Children according to Brumpt[46] may be considered as a reservoir of the disease. If such is the case, then, San Carlos community becomes an ideal location for the preservation and increase of the disease. The possible reason for the lower incidence of malaria at Saulpaca is that within a few miles of this community Dr. David Thaeler maintains his clinic and hospital. Thaeler has furthermore been instrumental in teaching the people the principles of swamp drainage and malaria control. It would be reasonable to expect that in

[46] Brumpt, E. Precis de Parasitologie, 4th ed., 1927, Paris.

3: Pijoan D-5 (ca. 1945) 1946
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villages on the Coco River. In and around Waspam, San Carlos, and Bilwas Karma several cases were seen which appeared to have the stigmata of the disease. Dr. Daniel F. Molloy of the Rockefeller Foundation once informed Dr. George Shattuck [82] that yaws in Honduras and in Nicaragua occurred in "nests". It was our impression that the same can be said for syphilis. Several cases were seen in and about Bilwas that were being treated and although the disease does not present itself as a major Public Health problem within the Coco Basin it is important that it be treated since there is every likelihood that it will spread.

Yaws

Yaws is a common disease in the tropic regions of Central America and it is often seen in the subjects of the Coco Basin. There appears to be some evidence that Yaws was an ancient disease in the Americas. Hirsch [72] and Shattuck [82] agree that yaws was an importation from Africa. In a survey of a hundred patients at San Carlos nine of them yaws, three of the subjects were boys between the ages of 10 and 18 who had the typical secondary eruption of yaws. The other six patients had a mixture of annular tertiary lesions and chronic eruptions. Treponema was demonstrated in four of the patients. Although no formal survey was undertaken, Dr. Thaeler and others [80] had the impression that the disease was common in the area. The treatment of the subjects with mapharsen and bismuth salicylate results in a dramatic response, and at the end of the third weekly injection most of the lesions had disappeared. It would appear to us that a definite program could be established with regard to the treatment of yaws wherein a sustained effort in a field project could accomplish the treatment of the majority of the cases within a short period of time. Thus a team could enter into a territory and make a definite tour with a view of treating yaws. Although the disease would probably not be eliminated by such a measure it would no doubt be suppressed in its spread to a where it might considered a minor public health problem.

Pinta

The disease pinta is characterised by changes in pigmentation as a result of *Treponema Carateum* infection. Is is presumed to be of

[80] Rosenfeld, L. in his survey of March, 1943 found among 200 subjects at Raiti and San Carlos, 26 of them with yaws and 18 of them with Pinta and 2 with both diseases combined.